

IN THE CLAIMS:

Please amend the claims as follows:

1. (Previously presented) A method, comprising generating a hybrid spread spectrum signal including: modulating a carrier frequency of a direct sequence spread spectrum signal by fast frequency hopping,

wherein multiple frequency hops occur within a single data-bit time and each bit is represented by chip transmissions at multiple frequencies.
- 2-3. (Canceled)
4. (Currently amended) The method of claim 1, further comprising directly digitally synthesizing ~~a digital~~ an output signal.
5. (Canceled)
6. (Previously presented) The method of claim 1, wherein fast frequency hopping includes frequency sweeping.
7. (Original) The method of claim 1, further comprising time hopping the signal.

8. (Previously presented) The method of claim 1, wherein modulating the signal includes increasing multipath immunity including controlling a signal amplitude using one or more pseudorandom control codes which are programmably related by one or more relationships selected from the groups consisting of direct subsets, rolling code segments, scrambling of code vectors and table-based reassignments of the bit-pattern relationships.
9. (Previously presented) The method of claim 1, further comprising splitting the signal into two identical components; and modulating an amplitude of at least one of the two identical components to control a polarization of the signal.
10. (Original) The method of claim 9, wherein modulating the polarization of the signal includes controlling feed power levels to antennas of orthogonal polarizations.
11. (Original) The method of claim 1, further comprising transmitting the signal to a radio frequency tag and receiving a transformed version of the signal from the radio frequency tag.
12. (Currently amended) A computer program, comprising computer ~~or machine~~ readable ~~program elements~~ instructions embodied on a computer readable storage medium and translatable for implementing the method of claim 1.
13. (Cancelled)

14. (Currently amended) ~~An electronic computer readable~~ storage medium, comprising a computer program embodied thereupon for performing the method of claim 1.

15. (Previously presented) An apparatus, comprising a transmitter capable of generating a hybrid spread-spectrum signal including:

a pseudo-random code generator;

a fast hopping frequency synthesizer coupled to the pseudo-random code generator;

a master clock coupled to the pseudo-random code generator and the fast hopping frequency synthesizer; and

a balanced modulator coupled to the pseudo-random code generator and the fast hopping frequency synthesizer, wherein the balanced modulator generates a direct sequence spread spectrum signal,

wherein multiple frequency hops occur within a single data-bit time and each bit is represented by chip transmissions at multiple frequencies.

16. (Previously presented) The apparatus of claim 19, further comprising an amplification circuit coupled to the amplitude controller.

17. (Previously presented) The apparatus of claim 19, further comprising a signal attenuator circuit coupled to the amplitude controller.

18. (Previously presented) The apparatus of claim 16, further comprising a switch coupled between the coincidence gate and the amplification circuit.

19. (Previously presented) The apparatus of claim 15, further comprising an amplitude controller coupled to the pseudo-random code generator.

20-32. (Canceled)

33. (Previously presented) A method, comprising generating a hybrid spread-spectrum signal including:

frequency hopping a carrier signal;

direct sequence modulating the carrier signal to produce a hybrid spread spectrum signal;

splitting the hybrid spread spectrum signal into two identical components; and

modulating an amplitude of at least one of the two identical components, wherein each component feeds a separate antenna, wherein the two antennas define an orthogonal polarization.

34. (Previously presented) The method of claim 33, wherein multiple frequency hops occur within a single data-bit time and each bit is represented by chip transmissions at multiple frequencies.

35. (Currently amended) The method of claim 34, further comprising:
directly digitally synthesizing a ~~digital~~ an output signal.

36. (Previously presented) The method of claim 33, further comprising time hopping the signal.

37. (Previously presented) An apparatus, comprising a transmitter capable of generating a hybrid spread-spectrum signal including:

a pseudo-random code generator;

a hopping frequency synthesizer coupled to the pseudo-random code generator;

a master clock coupled to the pseudo-random code generator and the hopping frequency synthesizer;

a balanced modulator coupled to the pseudo-random code generator and the hopping frequency synthesizer, wherein the balanced modulator generates a direct sequence spread spectrum signal; and

a splitter coupled to the balanced modulator.

38. (Previously presented) The apparatus of claim 37, further comprising a first amplitude controller coupled to the pseudo-random code generator and a second amplitude controller coupled to the pseudo-random code generator.

39. (Previously presented) The apparatus of claim 38, further comprising an amplification circuit coupled to the first amplitude controller.

40. (Previously presented) The apparatus of claim 39, further comprising another amplification circuit coupled to the second amplitude controller.

41. (Previously presented) The apparatus of claim 37, further comprising a logic interface coupled to the hopping frequency synthesizer.

42. (Original) The apparatus of claim 41, wherein the logic interface includes a field-programmable gate array.

43. (Original) An integrated circuit, comprising the apparatus of claim 37.

44. (Original) The integrated circuit of claim 43 further comprising a coupled receiver.

45. (Original) A system, comprising the integrated circuit of claim 44 and a radio frequency tag.

46. (Original) A circuit board, comprising the integrated circuit of claim 43.

47-48. (Cancelled)

49. (Previously presented) A method, comprising generating a hybrid spread-spectrum signal including:

modulating a signal by utilizing a subset of bits from a pseudo-random code generator to control a fast hopping frequency synthesizer;

fast frequency hopping the signal with the fast hopping frequency synthesizer, wherein multiple frequency hops occur within a single data-bit time and each bit is represented by chip transmissions at multiple frequencies; and
time hopping the signal.

50. (Canceled)

51. (Previously presented) The method of claim 49, wherein the hybrid spread spectrum signal includes a direct sequence spread spectrum signal.

52. (Currently amended) The method of claim 49, further comprising directly digitally synthesizing ~~a digital~~ an output signal.

53. (Original) The method of claim 49, wherein the fast hopping frequency synthesizer provides a substantially constant envelope signal.

54. (Previously presented) The method of claim 49, wherein fast frequency hopping includes frequency sweeping.

55. (Previously presented) The method of claim 49, wherein modulating the signal includes increasing multipath immunity including controlling a signal amplitude using one or more pseudorandom control codes which are programmably related by one or more relationships

selected from the groups consisting of direct subsets, rolling code segments, scrambling of code vectors and table-based reassignments of the bit-pattern relationships.

56. (Previously presented) The method of claim 49, further comprising splitting the signal into two identical components; and modulating an amplitude of at least one of the two identical components to control a polarization of the signal.

57. (Original) The method of claim 56, wherein modulating the polarization of the signal includes controlling feed power levels to antennas of orthogonal polarizations.

58. (Original) The method of claim 49, further comprising transmitting the signal to a radio frequency tag and receiving a transformed version of the signal from the radio frequency tag.

59. (Currently amended) A computer program, comprising computer ~~or machine~~ readable ~~program elements~~ instructions embodied on a computer readable storage medium and translatable for implementing the method of claim 49.

60. (Cancelled)

61. (Currently amended) ~~An electronic~~ computer readable storage medium, comprising a computer program embodied thereupon for performing the method of claim 49.

62. (Previously presented) An apparatus, comprising a transmitter capable of generating a hybrid spread-spectrum signal including:
- a pseudo-random code generator;
 - a fast hopping frequency synthesizer coupled to the pseudo-random code generator, wherein multiple frequency hops occur within a single data-bit time and each bit is represented by chip transmissions at multiple frequencies;
 - a master clock coupled to the pseudo-random code generator and the fast hopping frequency synthesizer;
 - a coincidence gate coupled to the pseudo-random code generator; and
 - a balanced modulator coupled to the coincidence gate, the pseudo-random code generator and the fast hopping frequency synthesizer.
63. (Original) The apparatus of claim 62, further comprising an amplitude controller coupled to the pseudo-random code generator.
64. (Original) The apparatus of claim 63, further comprising an amplification circuit coupled to the amplitude controller.
65. (Original) The apparatus of claim 63, further comprising a signal attenuator circuit coupled to the amplitude controller.
66. (Original) The apparatus of claim 62, wherein the fast hopping frequency synthesizer provides a substantially constant envelope signal.

67. (Cancelled)

68. (Previously presented) The method of claim 33, wherein modulating the polarization of the signal includes controlling feed power levels to antennas of orthogonal polarizations.

69. (Previously presented) The method of claim 33, further comprising transmitting the signal to a radio frequency tag and receiving a transformed version of the signal from the radio frequency tag.

70. (Currently amended) A computer program, comprising computer ~~or machine~~ readable program elements instructions embodied on a computer readable storage medium and translatable for implementing the method of claim 33.

71. (Currently amended) ~~An electronic~~ computer readable storage medium, comprising a computer program embodied thereupon for performing the method of claim 33.

72. (Previously presented) The method of claim 33, wherein modulating the signal includes increasing multipath immunity including controlling a signal amplitude using one or more pseudorandom control codes which are programmably related by one or more relationships selected from the groups consisting of direct subsets, rolling code segments, scrambling of code vectors and table-based reassignments of the bit-pattern relationships.

73. (Previously presented) The apparatus of claim 37, wherein the hopping frequency synthesizer includes a fast hopping frequency synthesizer wherein multiple frequency hops occur within a single data-bit time and each bit is represented by chip transmissions at multiple frequencies.

74. (Previously presented) The apparatus of claim 73, wherein the fast hopping frequency synthesizer provides a substantially constant envelope signal.